CBCS SCHEME

USN | | | | | | | | | | |

20MBA14

First Semester MBA Degree Examination, July/August 2022
Business Statistics

Time: 3 hrs. Max. Marks:100

Note: *1. Answer any FOUR full questions from Q1 to Q7.*
2. Question No.8 is compulsory.
3. Use of statistical table is allowed.

1 a. Why statistics is required for business and management. **(03 Marks)**

b. You are working as a purchase manager for company. The following information has been supplied to you by two manufactures of electric bulbs.

	Company A	Company B
Mean life (in hrs)	1300	1248
SD (in hrs)	82	93
Sample size	100	100

(07 Marks)

c. The following data relate to age of employees and the number of days they reported sick in a month. Calculate Karl Pearson's coefficient of correlation and interpret it.

Age (years)	30	32	35	40	48	50	52	55	57	61
Sick (days)	1	0	2	5	2	4	6	5	7	8

(10 Marks)

2 a. What is Bayesian Decision Rule? **(03 Marks)**

b. The following distribution gives the pattern of overtime work done by 100 employees of a company. Find the mean and SD.

Overtime (hrs)	10 – 15	15 – 20	20 – 25	25 – 30	30 – 35	35 – 40
No. of employees	11	20	35	20	8	6

(07 Marks)

c. The following table relates to the tourist arrivals (in millions) during 2001 to 2007 in India.

Year	2001	2002	2003	2004	2005	2006	2007
Tourist arrive (in million)	18	20	23	25	24	28	30

Fit a straight line trend by the method of least squares an estimate the number of tourist that would arrive in the year 2011. **(10 Marks)**

3 a. Define Correlation and Regression. **(03 Marks)**

b. What are the Components of Time Series Analysis? **(07 Marks)**

c. The score of two batsman A and B in 10 innings during a certain season are given below. Find which of the two batsmen A and B is more consistent in scoring.

A	32	28	47	63	71	39	10	60	96	14
B	19	31	48	83	67	90	10	62	40	80

(10 Marks)

4 a. Define Hypothesis? **(03 Marks)**

b. The following table given the numbers days in a 50 day period during automobile accidents occurred in a city. Find a Poisson distribution.

Number of Accidents	0	1	2	3	4
Number of days	21	18	7	3	1

(07 Marks)

c. From the following data find :

i) The two regression coefficient?

ii) Two regression equations?

iii) The coefficient of correlation between the marks in economics and statistics?

iv) Most likely marks in statistics when marks in economics are 30.

Marks in Economics	25	28	35	32	31	36	29	38	34	32
Marks in Statistics	43	46	49	41	36	32	31	30	33	39

(10 Marks)

5 a. Mention various measures of central tendency. **(03 Marks)**

b. Construct a scatter plot for a data obtained in a study of age and blood pressure of 6 randomly selected people. The data are shown in the table.

Subject	Age	Blood pressure
A	43	128
B	45	120
C	56	135
D	61	143
E	67	141
F	70	152

(07 Marks)

c. A hospital has 20 kidney dialysis machines and the chance of any one of them malfunctioning during any day is 0.02. You are required to find the probability that exactly 3 machines will be out of service on the same day then.

i) Can we use the binominal formula to find out this probability?
If yes, calculate the probability?

ii) Can we use the Poisson formula to find out this probability?
If yes, calculate the probability? **(10 Marks)**

6 a. What is Time Series Analysis? **(03 Marks)**

b. Explain the steps in formulating of Hypothesis. **(07 Marks)**

c. Out of a sample of 120 persons in a village, 76 persons were administered a new drug for preventing influenza and out of them 24 persons were a attacked by influenza out of those who were not administered the new drugs, 12 persons were not affected by influenza. Prepare 2×2 table showing and expected frequencies. Chi square test for finding the new during is effective or not. [At 5% level of one degree of freedom, the value of X^2 is 3.84]. **(10 Marks)**

7 a. What is Normal distribution? **(03 Marks)**

b. Discuss the various types of correlation with example. **(07 Marks)**

c. A brokerage survey reports that 30% of individual investors have used a discount broker, i.e, one which does not charge the full commission. In a random sample of 9 individuals, what is the probability that :

i) Exactly two of the sampled individuals have used a discount broker?

ii) Not more than 3 have used a discount broker

iii) Atleast 3 of them have used a discount broker. **(10 Marks)**

8 To study the performance of three detergents and three different water temperatures the following whiteness readings were obtained with specially designed equipment :

Water temp	Detergent A	Detergent B	Detergent C
Cold water	57	55	67
Warm water	49	52	68
Hot water	54	46	58

Perform a two way analysis of variance, using 5% level of significance.
[Given : F 5% = 6.940]. **(20 Marks)**

* * * * *